

Notice of Allowability

Application No.

09/975,723

Examiner

Dr. Kailash C. Srivastava

Applicant(s)

NACKMAN ET AL.

Art Unit

1655

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Amendment filed 22 April 2005.
2. ☒ The allowed claim(s) is/are 39-62.
3. ☒ The drawings filed on 11 October 2001 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date 07.12.2005.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

Examiner's Amendment/Comments

1. The Art Unit Location to which your application has been assigned at the USPTO is changed to Art Unit 1655. To aid in correlating any papers for this application, all further correspondence regarding this application should be directed to Examiner Kailash C. Srivastava in Art Unit 1655.
2. Applicants' response and amendment filed 22 April 2005 to Office Action of 20 October 2004 is acknowledged and entered.

CLAIMS STATUS

3. Claims 1-38 are cancelled.
4. Claims 39-62 have been added.
5. Claims 39-62 are pending and are examined on merits.

Examiner's Amendment

6. An Examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicants, an amendment may be filed as provided by 37 CFR §1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this Examiner's amendment was given in a telephone interview on 12 July 2005 with Ms. Sarah J. Fashena, Applicants' Representative.

In the Claims:

- Claims 1-38 are cancelled without prejudice or disclaimer.
- Claims 39-62 are added as follows:

39. A method for populating a solid surface of a graft or biomedical device with cells;
wherein said method comprises seeding a first population of altered endothelial cells onto said solid surface;

wherein said altered endothelial cells are obtained by genetic engineering techniques; and
said altered endothelial cells exhibit increased cell-to-cell cohesion.

40. The method of claim 39 for populating a solid surface of a graft or biomedical device with cells, said method comprising reducing the amount of dissociation of cadherin from the cytoskeleton of said cells.

41. The method of claim 40, wherein dissociation is reduced by reducing or eliminating the phosphorylation of a molecule associated with the adherens junction between the cells.
42. The method of claim 39 for populating a solid surface of a graft or biomedical device with cells, said method comprising increasing the amount of cadherin per cell.
43. The method of claim 39 for populating a solid surface of a graft or biomedical device with cells, wherein the cells are human vascular endothelial cells, said method comprising increasing the cell-to-cell cohesion of said endothelial cells.
44. The method of claim 43 for populating a solid surface of a graft or biomedical device with human vascular endothelial cells, said method comprising reducing the amount of dissociation of cadherin from the cytoskeleton of said human vascular endothelial cells.
45. The method of claim 44, wherein said dissociation is reduced by reducing or eliminating the phosphorylation of a molecule associated with the adherens junction between the human vascular endothelial cells.
46. The method of claim 45, wherein the molecule associated with the adherens junction is β catenin.
47. The method of claim 45, wherein phosphorylation is reduced or eliminated by applying an amount of an agent that is known to modify said phosphorylation to reduce or eliminate said phosphorylation.
48. The method of claim 43 for populating a solid surface of a graft or biomedical device with human vascular endothelial cells, said process comprising increasing the amount of cadherin per cell.
49. The method of Claim 48, wherein the amount of cadherin per cell is increased by increasing the number of expressible cadherin genes in the endothelial cells.
50. The method of Claim 48, wherein the increased cadherin comprises a eukaryotic cadherin polypeptide.
51. The method of Claim 50, wherein the eukaryotic cadherin polypeptide is a mammalian cadherin polypeptide.
52. The method of Claim 51, wherein the mammalian cadherin polypeptide is a human cadherin polypeptide.

53. The method of Claim 52, wherein the human cadherin polypeptide is selected from the group consisting of an N-cadherin polypeptide, a P-cadherin polypeptide, an E-cadherin polypeptide, and a VE-cadherin polypeptide.
54. A method to increase cell-to-cell cohesion in human vascular endothelial cells on a graft or biomedical device.
55. The method of claim 54 comprising increasing the amount of cadherin per cell in vascular endothelial cells.
56. The method of Claim 54, wherein the increase in cohesion is achieved by increasing the number of cell surface molecules involved in cell-to-cell cohesion.
57. The method of claim 54 comprising reducing the amount of dissociation of cadherin from the cytoskeleton of said human vascular endothelial cells.
58. The method of Claim 57, wherein the increase in cohesion is achieved by increasing the number of molecules that bridge cadherin to the cytoskeleton.
59. The method of claim 39, wherein said graft or biomedical device is in contact with an arterial and/or venous system.
60. The method of claim 39, wherein said solid surface is a surface of a graft.
61. The method of claim 60, wherein said graft is a vascular graft.
62. The method of claim 60, wherein said graft is a tubular graft.

Examiner's Reasons for Allowance

7. The following is Examiner's statement of reasons for allowance:

The closest prior art are:

- Gencheff et al. (U.S. Patent 5,256,141),
- Schnittler et al., American J. Physiol., 1997, Volume 273, Pages H2396-H2405),
- Hordijk et al. (J. Cell Sci, 1999, Volume 112, pages 1915-1923) with evidence provided by Stedman's Medical Dictionary (1995. Williams and Wilkins, Baltimore); and
- Navarro et al. (Journal of Biological Chemistry, 1995, Volume 270, Pages 30965-30972).

Genchoff et al. teach seeding epithelial cells on a biomedical device (i.e., a catheter) and implanting said cells in a vascular wall tissue through electrodes. Therefore intrinsically said epithelial cells are altered because they sustain the electrical energy applied to implant said cells. Genchoff et al., however, do not teach implantation of epithelial cells that have been genetically altered and are silent about said endothelial cells exhibiting increased cell-to-cell cohesion. As demonstrated on record (Office Action mailed 20 October 2004), the combined teachings from Schnittler et al., Hordijk et al. with evidence provided by Stedman's Medical Dictionary and Navarro et al. although teach enhancement of cell to cell cohesion on a solid surface via same techniques and methods as claimed in the instant invention, however, those teachings do not disclose seeding a biomedical device with epithelial cells that have been genetically altered.

Thus, the prior art references cited *supra* do not expressly or implicitly teach or reasonably suggest a method that is instantly claimed.

Any comments considered necessary by applicants must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

CONCLUSION

8. Claims 39-62 are allowed.


9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Kailash C. Srivastava whose telephone number is (571) 272-0923. The examiner can normally be reached on Monday to Thursday from 7:30 A.M. to 6:00 P.M. (Eastern Standard or Daylight Savings Time).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Bruce Campell, can be reached on (571)-272-0974 Monday through Friday 8:00 A.M. to 4:30 P.M. The fax phone number for the organization where this application or proceeding is assigned is (571)-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding may be obtained from the Patent Application Information Retrieval (i.e., PAIR) system. Status information for the published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (i.e., EBC) at: (866)-217-9197 (toll-free). Alternatively, status inquiries should be directed to the receptionist whose telephone number is (703) 308-0196.

Kailash C. Srivastava, Ph.D.
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July 13, 2005


RALPH GITOMER
PRIMARY EXAMINER
GROUP 1200